Feasibility Study Cost Estimate for Alternative 2D Allied Paper/Kalamazoo River—Operable Unit 1 WA No. 109-RICO-059B/Contract No. EP-S5-06-01

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At the request of the USEPA, CH2M HILL has prepared a cost estimate for Alternative 2D for the Allied Landfill Allied Paper/Kalamazoo River—Operable Unit 1 Feasibility Study Report. This technical memorandum (TM) provides the cost estimate with supporting information. Alternative 2D is based on the extents of excavation in Alternative 2B and construction of the associated cover system. Detailed descriptions of Remedial Alternatives, except Alternative 2D, can be found in the Feasibility Study Report submitted in January 2013.

The primary difference between Alternatives 2B and 2D is the addition of a 2-foot low permeability clay layer in the cover system of Alternative 2D as an additional protective measure against infiltration. The addition of the 2-foot clay layer necessitates a change in the type of flexible membrane liner (FML) proposed in the cover system. A 40-mil textured low-linear density polyethylene (LLDPE) FML for Alternative 2D is assumed to address slope stability concerns. The cap for Alternative 2D consists of eight layers. The layers are (from bottom to top): a soil grading layer, a non-woven geotextile separation layer, a 12-inch-thick (minimum) sand gas venting layer, a 2-foot thick low permeability clay layer, a 40-millimeter textured LLDPE FML or equivalent, a 16 oz geosynthetic composite layer, a 24-inch-thick (minimum) drainage and soil protection layer, and a 6-inch-thick (minimum) vegetated, topsoil layer.

Alternatives 2A, 2B, and 2C assume the use of a 30-mil polyvinyl chloride (PVC) FML. A cross-section of the assumed cover system for Alternatives 2A, 2B, and 2C is shown in Figure 4-2C from the Feasibility Study Report. Cross-sections for each of the cover systems are provided in Figures 4-2C and 4-2D attached to this TM. Actual cover construction will be determined during the remedial design for the selected alternative.

Cost Summary

The estimated cost for Alternative 2D is $44 million. A summary of the estimated costs for each Remedial Alternative presented in the Feasibility Study Report is provided in the following table.

Summary of Remedial Alternative Costs

OU1 Feasibility Study Report—Allied Paper, Inc. / Portage Creek / Kalamazoo River Superfund Site

Alternative	Estimated Capital Cost	Estimated O&M Cost	Estimated Periodic Cost	Total Present-worth Cost
Alternative 1	$0	$0	$54,000	$54,000
Alternative 2A	$36 million	$4.0 million	$54,000	$40 million
Subalternative (i)	$1.6 million	$1.5 million		$3.1 million
Subalternative (ii)	$10 million	$1.5 million		$12 million
Alternative 2B	$36 million	$3.0 million	$54,000	$39 million
Subalternative (i)	$1.5 million	$1.5 million		$3.0 million
Subalternative (ii)	$8.6 million	$1.5 million		$10 million
Alternative 2C	$57 million	$3.0 million	$54,000	$60 million
Alternative 2D	$41 million	$3.0 million	$54,000	$44 million
Alternative 3	$366 million	$0	$54,000	$366 million
Alternative 4	$131 million	$3.0 million	$54,000	$134 million

Note: Costs for subalternative (i) and (ii) for Alternative 2C and 2D are the same as Alternative 2B.

Detailed cost estimates and supporting assumptions for each Remedial Alternative are provided in Attachment 1.

Cost Resources

Estimator judgment and material unit pricing, based on or in part on Vendor Quotes, historical pricing and estimator experience, were used in the development of this cost estimate.

This is not an offer for construction and/or project execution. Please note, these feasibility level cost estimates are assumed to represent the actual installed cost within the range of -30 percent to +50 percent of the costs indicated. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final cost of the project will depend on actual labor and material costs and competitive market conditions, implementation schedule, and other variable factors.

Figures

Attachment 1

Feasibility Study Report Cost Estimate Tables 5-1 through 5-11